



## Section 319

# NONPOINT SOURCE PROGRAM SUCCESS STORY

# Oklahoma

## Implementing Agricultural Best Management Practices Decreases Turbidity in Bird Creek

### Waterbody Improved

High turbidity, due in part to practices associated with wheat and cattle production, resulted in impairment of Bird Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list in 2008. Implementation of best management practices (BMPs) to promote better quality grazing land and cropland decreased sediment loading into the creek. As a result, the entire length of 8-mile-long Bird Creek was removed from Oklahoma's 2012 CWA section 303(d) list for turbidity impairment. Bird Creek is now in partial attainment of its fish and wildlife propagation designated use.

### Problem

Bird Creek is an 8-mile-long stream in Choctaw County in southeastern Oklahoma (Figure 1). Land use in the 9,046-acre watershed is primarily wheat and pasture for cattle production, with some corn production as well. Poor grazing land and cropland management contributed to excess sedimentation in the watershed. In the 2008 water quality assessment, monitoring showed that 17 percent of Bird Creek's seasonal base flow water samples exceeded 50 nephelometric turbidity units (NTU). A stream is considered impaired by turbidity if more than 10 percent of the seasonal base flow water samples exceed 50 NTU (based on 5 years of data before the assessment year). On the basis of these assessment results, Oklahoma added the entire length of Bird Creek (OK410300010100\_00) to the 2008 and subsequent CWA section 303(d) lists for nonattainment of the fish and wildlife propagation designated use due to turbidity impairment.

### Project Highlights

Landowners implemented BMPs with assistance from Oklahoma's locally led cost-share program and through the local U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) and general conservation technical assistance program. From 2008 to 2011, landowners addressed erosion from pastures by improving pasture condition with 909 acres of prescribed grazing, 4,362 linear feet of cross-fencing, 25 acres of forage planting, and installation of one water

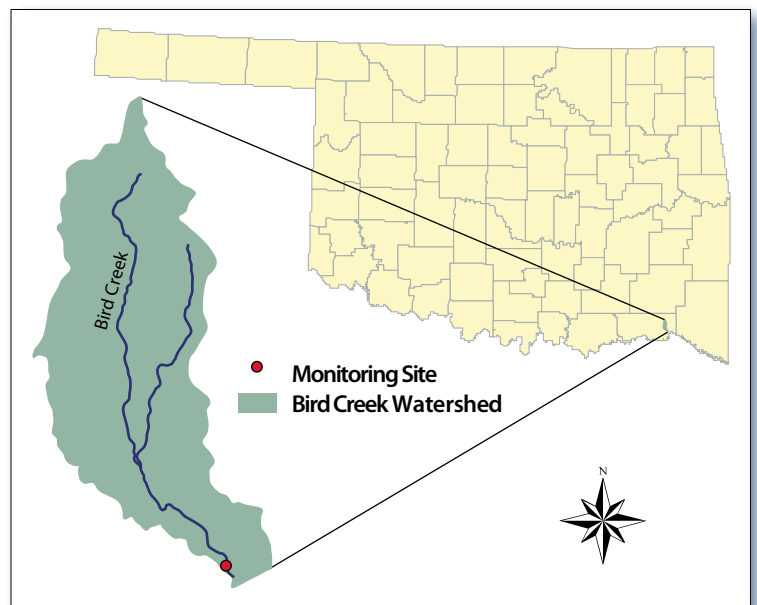


Figure 1. The Bird Creek watershed is in southeastern Oklahoma.

tank and two ponds for alternative water sources. Reduced cropland erosion was achieved by implementing conservation cover crops on 548 acres and no-till/residue management on 280 acres. Proper nutrient management on 450 acres and integrated pest management on 697 acres also improved cropland condition and reduced erosion potential. Landowners also planted 16 acres of trees/shrubs in the watershed.

Conservation work continues in the watershed. An additional 644 acres of prescribed grazing was

implemented through EQIP in 2012, along with further nutrient management and supplemental planting, which will prolong reduced erosion potential. In 2013 an additional 83 acres of no-till, 419 acres of rotational grazing, and 113 acres of nutrient management were implemented through the NRCS Conservation Stewardship Program.

## Results

The Oklahoma Conservation Commission's Rotating Basin Monitoring Program, a statewide nonpoint source ambient monitoring program, documented improved water quality in Bird Creek due to landowners implementing BMPs. In the 2008 assessment, 17 percent of seasonal base flow water samples exceeded the turbidity criteria of 50 NTU. This exceedance was reduced to zero percent in 2012 (Figure 2). Hence, Bird Creek was removed from Oklahoma's CWA section 303(d) list for turbidity impairment in 2012 and is now in partial attainment of the fish and wildlife propagation designated use (Figure 3).

## Partners and Funding

The Rotating Basin Monitoring Program is supported by EPA's CWA section 319 funds at an average annual cost of \$1 million. Monitoring costs include personnel, supplies, and lab analysis for 18 parameters from samples collected every 5 weeks at about 100 sites around the state, for a total of 20 episodes per 5-year cycle per basin. In-stream habitat, fish, and macroinvertebrate samples are also collected. Approximately \$600,000 in EPA CWA section 319 supports statewide education, outreach, and monitoring efforts through the Blue Thumb program. The Oklahoma cost-share program provided \$4,892 in state funding for BMPs in this watershed through the Kiamichi Conservation District. NRCS spent approximately \$1.36 million for implementation of BMPs in Choctaw County from 2008 to 2011 through NRCS EQIP and general technical assistance funds. Landowners provided a significant percentage of funding toward BMP implementation in these programs as well.

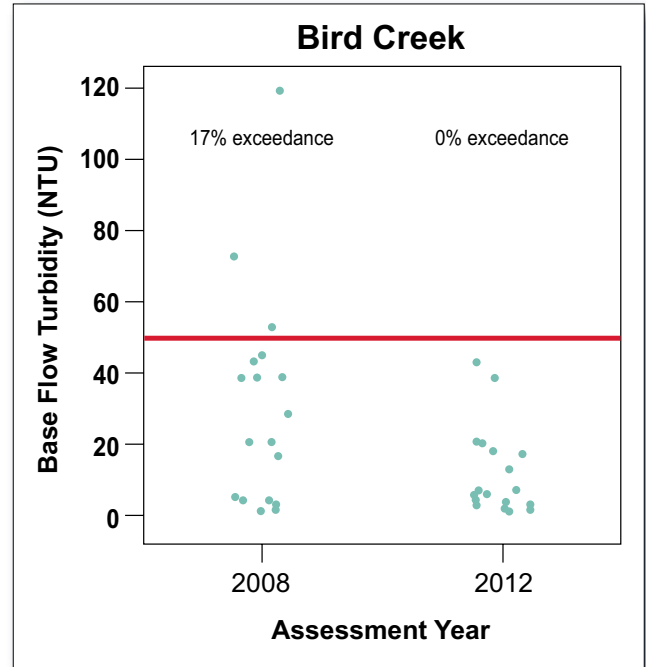


Figure 2. Monitoring data indicate that base flow turbidity levels in Bird Creek have declined.



Figure 3. Bird Creek is now in partial attainment of the fish and wildlife propagation designated use.



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